Universidad Popular del Cesar

# Reconocimiento de Patrones

Version 2023-II

## Definiciones

[ Capítulo 1 ]

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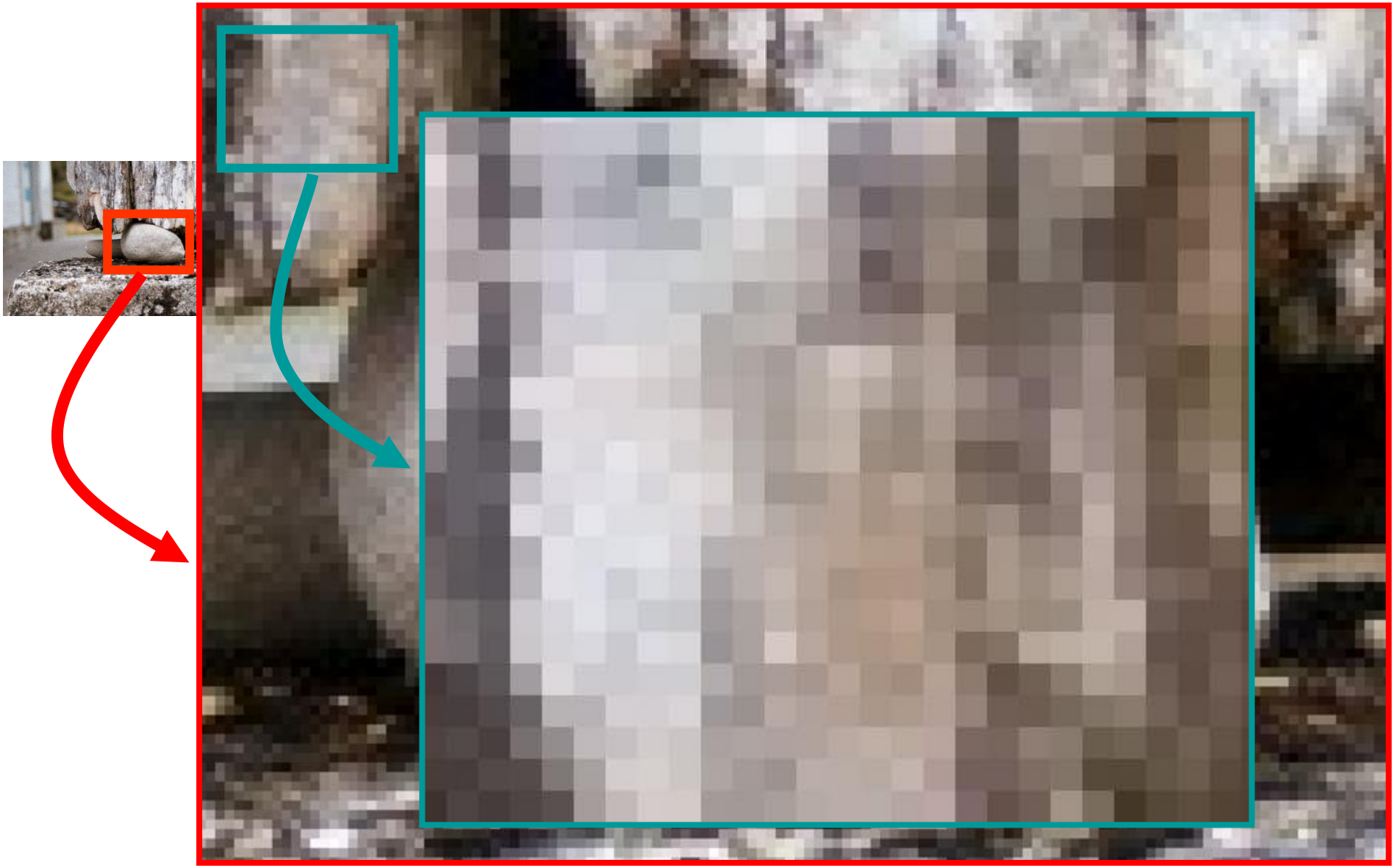
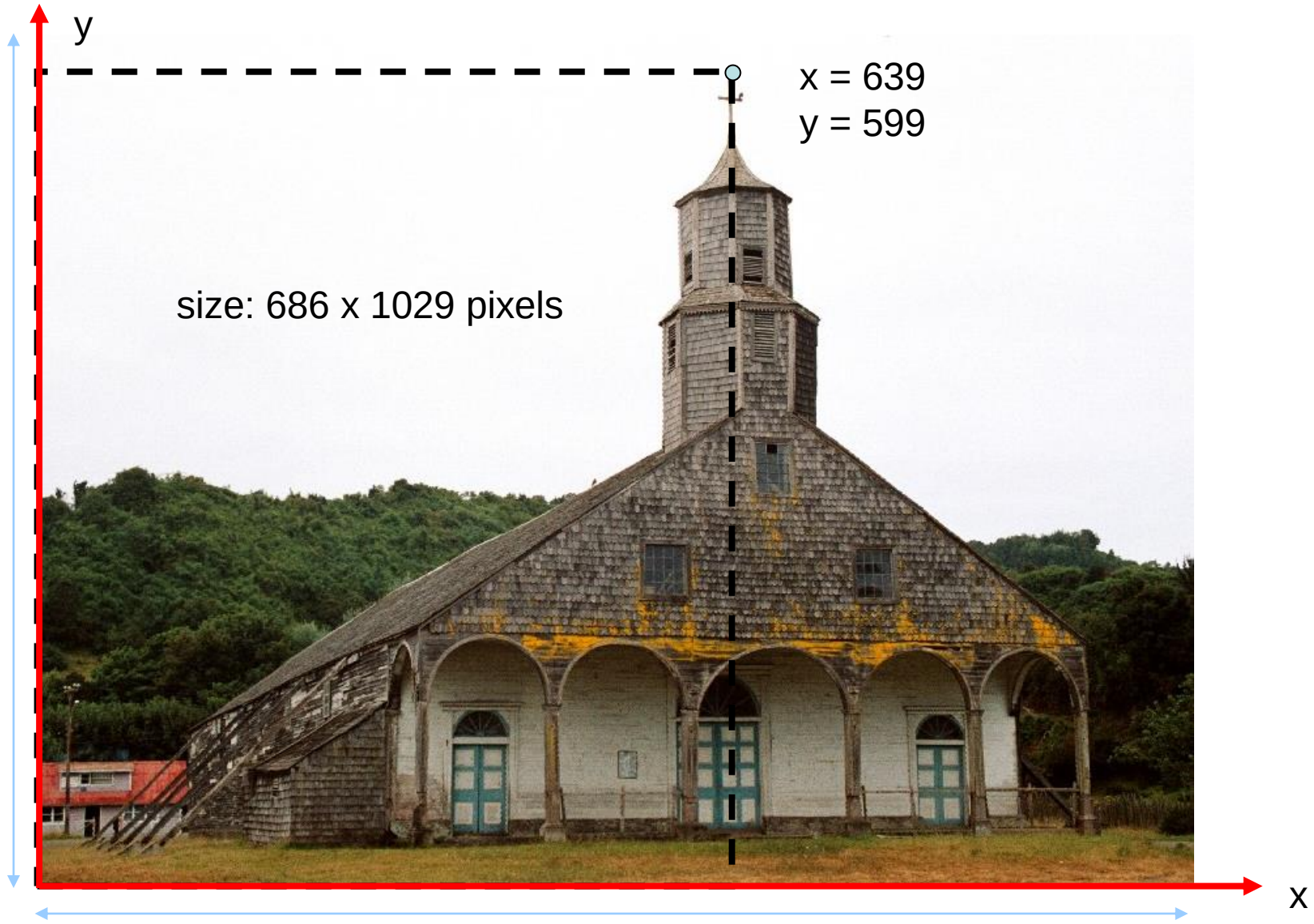
DSP-ASIC BUILDER GROUP
Director Semillero TRIAC
Ingenieria Electronica
Universidad Popular del Cesar

# Imágenes Digitales

# Imágenes Digitales (zoom)



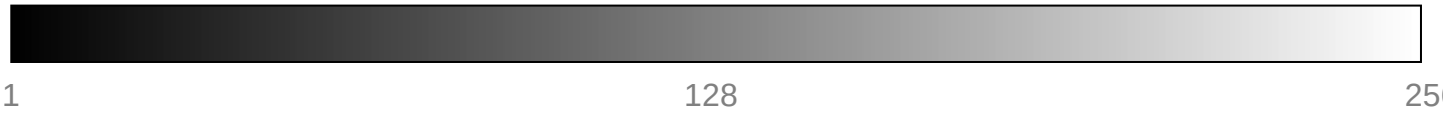
# Imágenes Digitales (coordenadas)

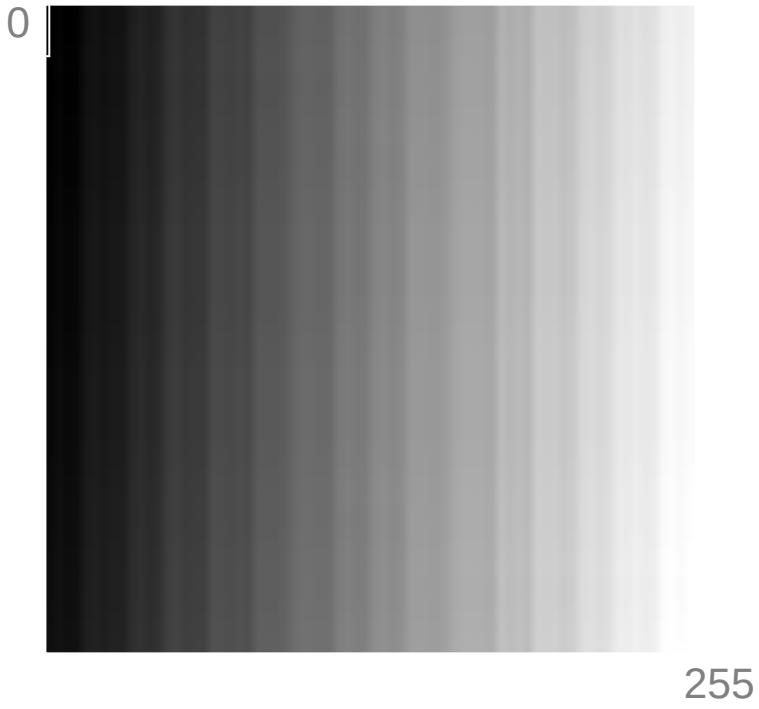


# Imágenes Digitales (color)

# Imágenes Digitales (color a blanco y negro)

# Imágenes Digitales (tonos de gris)



# Imágenes Digitales (operaciones)

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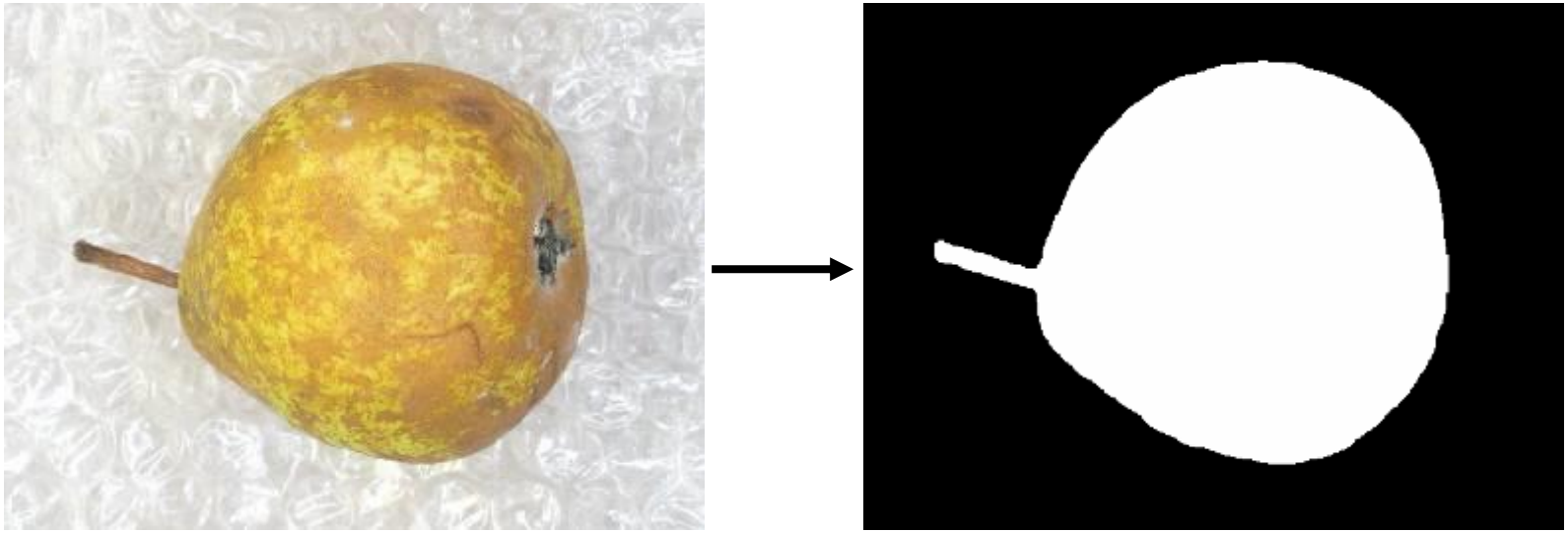
## *Image Processing*:

The use of computer algorithms that take an image as input and return an image as output.



[ INPUT ]

[ OUTPUT ]

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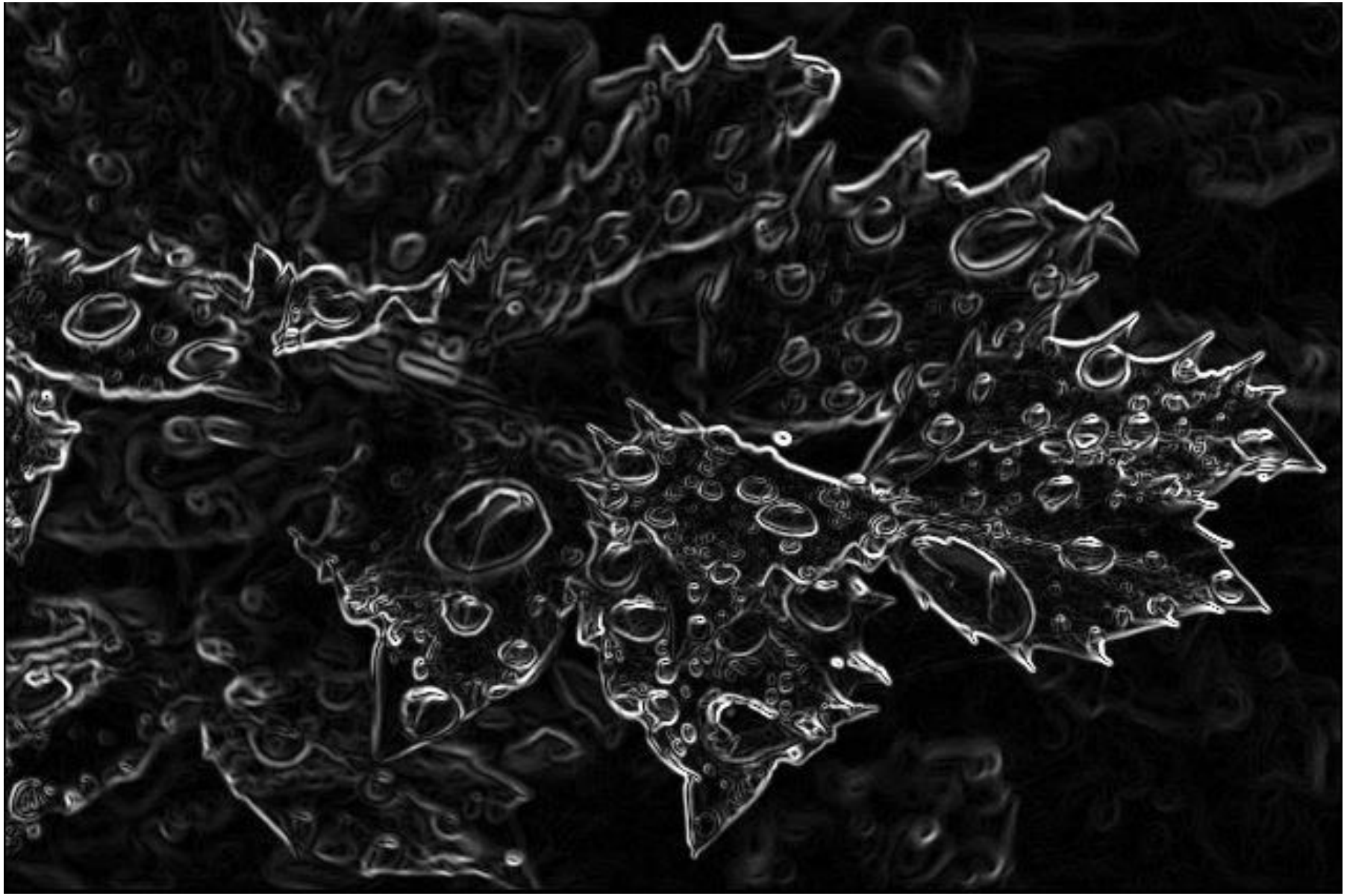
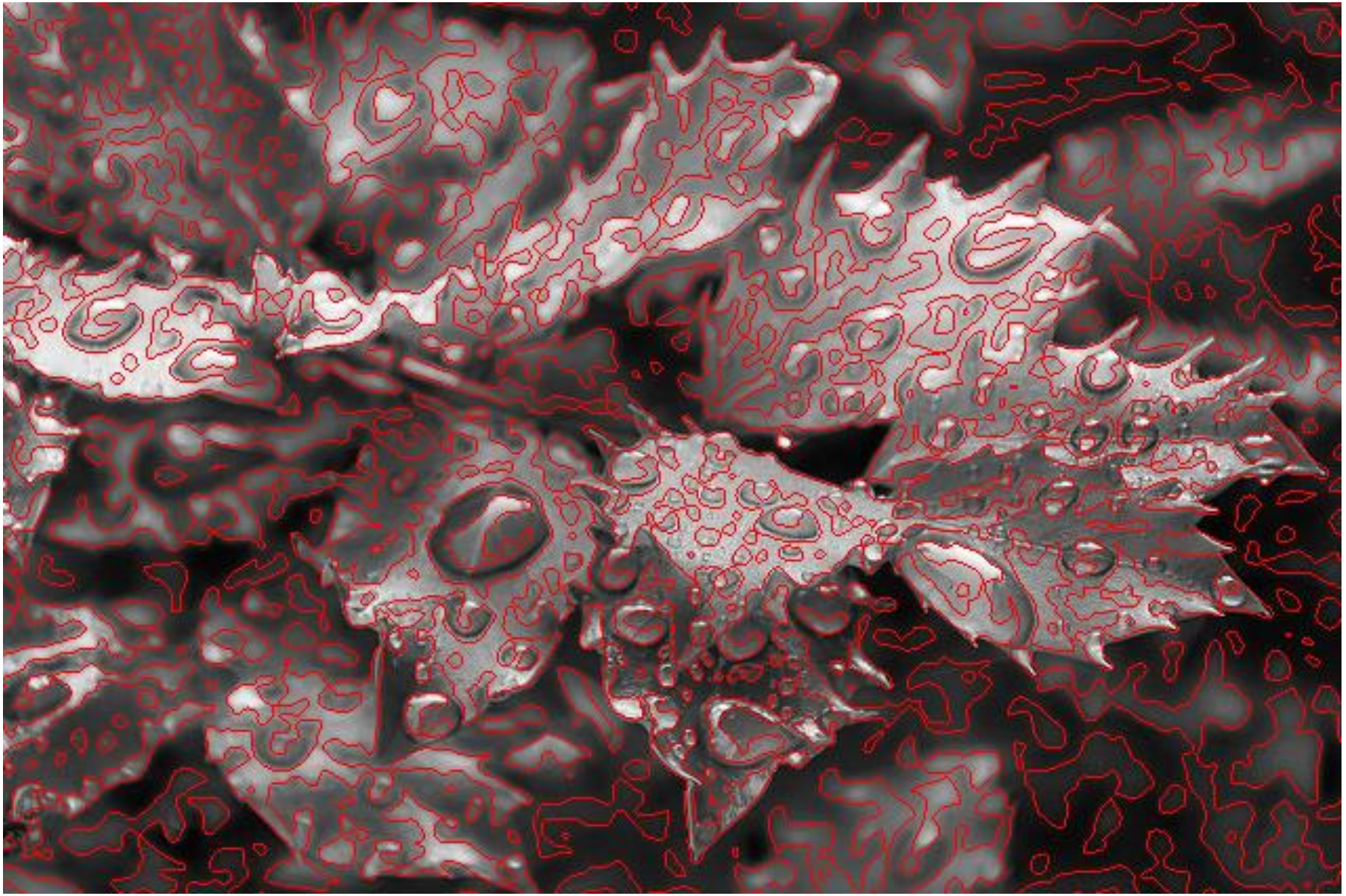




## *Image Processing*:

The use of computer algorithms that take an image as input and return an image as output.

[ INPUT ]

107
236

236

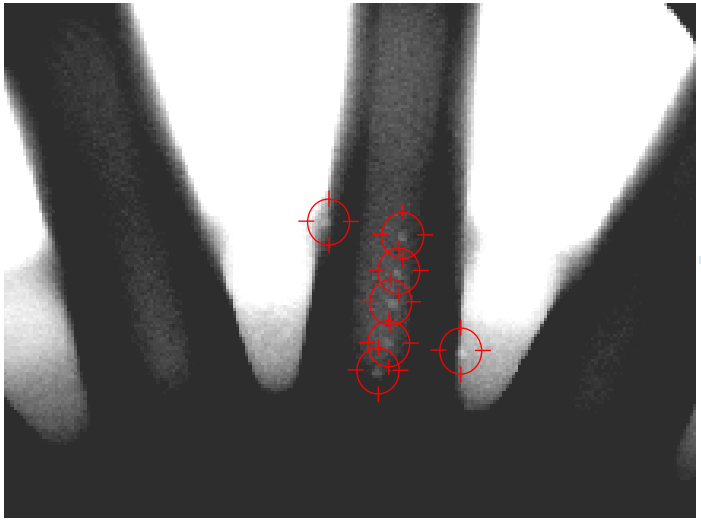
## *Image Processing*:

The use of computer algorithms that take an image as input and return an image as output.

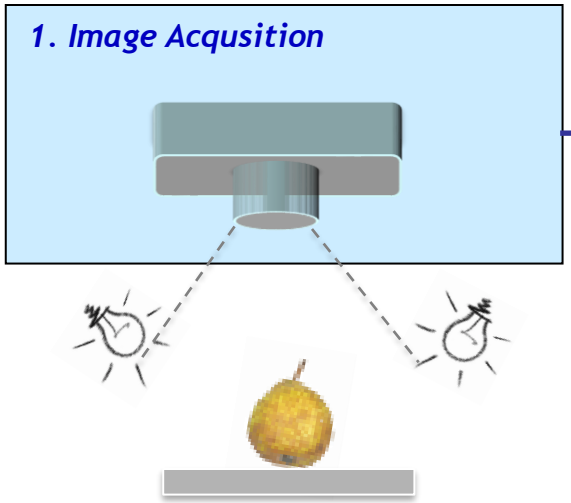
[ INPUT ]

## *Image Analysis*:

The use of computer algorithms that take an image as input and return a measurement, an interpretation or a decision.

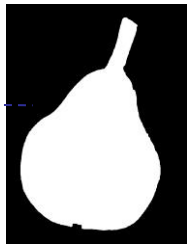


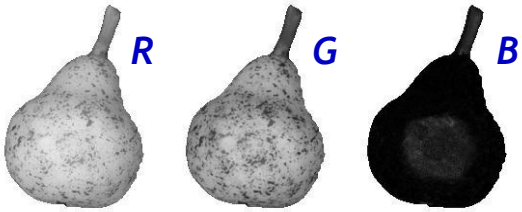
*The wheel has 7 defects*



2. Preprocessing

3. Segmentation






color

geometry

4. Feature Extraction

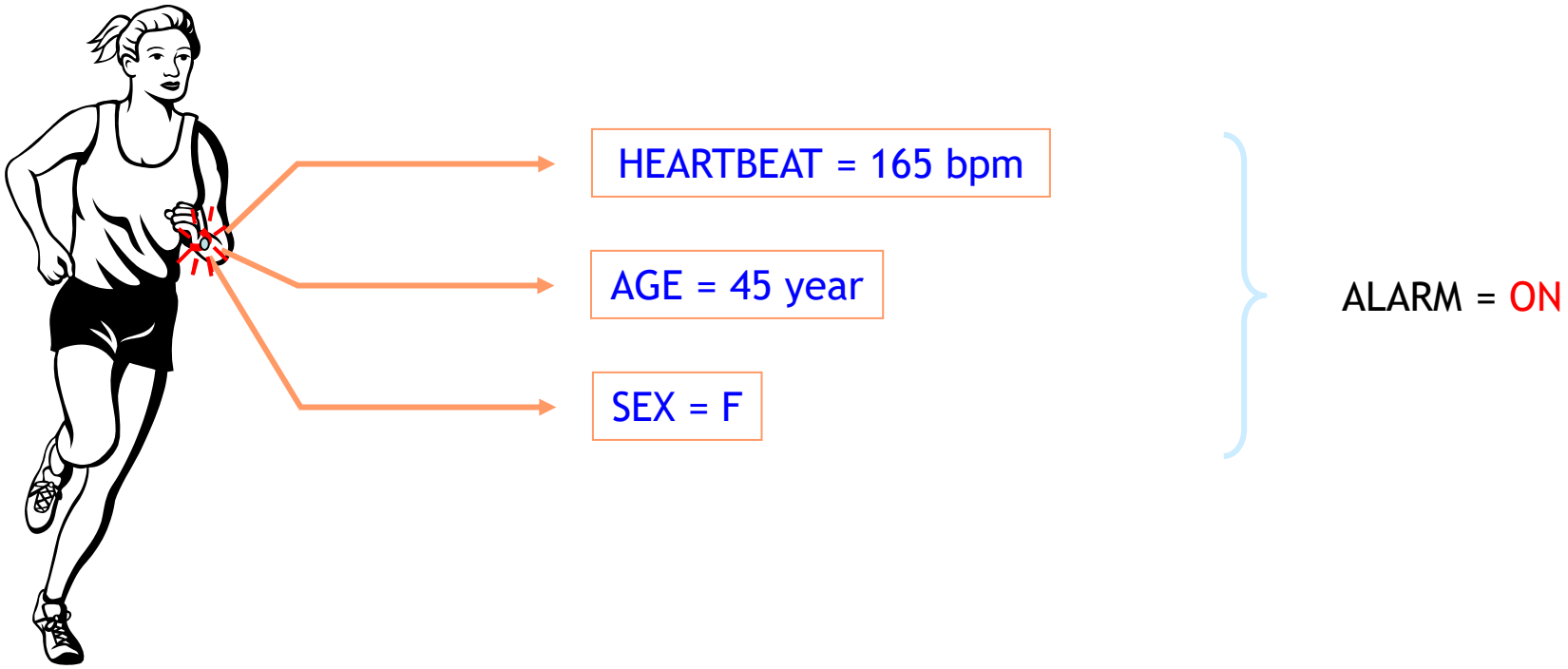
| Feature | Value |
|---|---|
| Intensity (Yellow) | 0.9875 |
| # spots | 542 |
| : | : |

5. Clasification

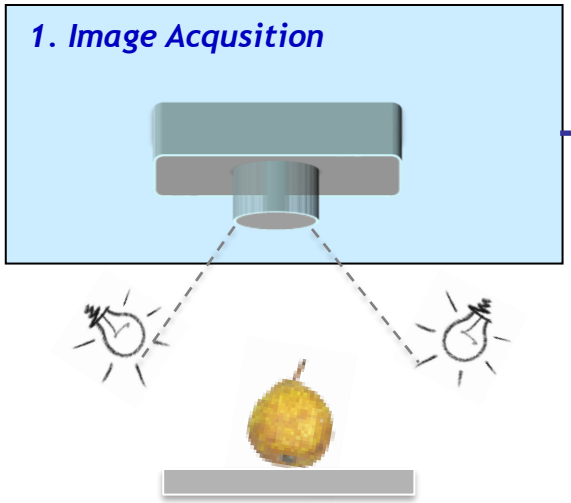
"premium"

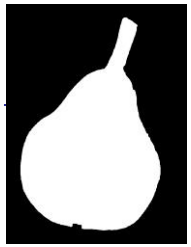
# *Pattern Recognition*:

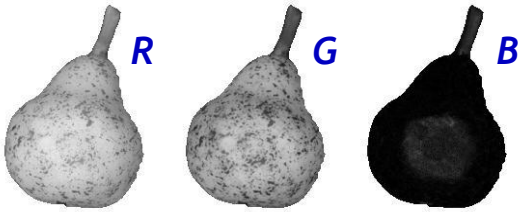
It is the science of making inferences based on data. Usually, it measures an object in order to assign it to a class.

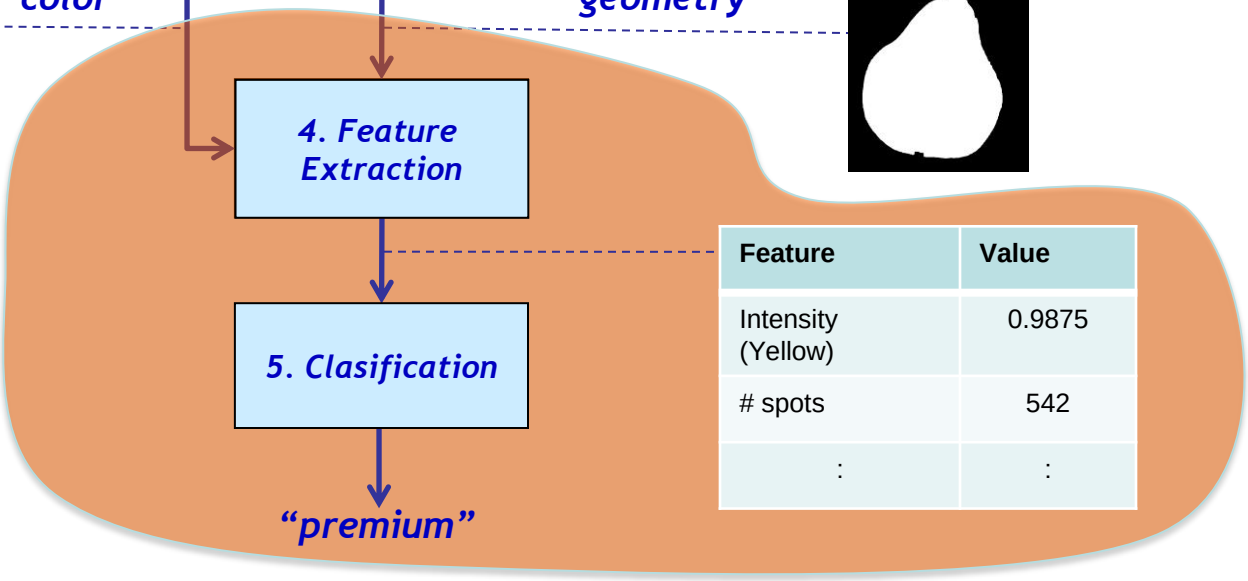


# Pattern Recognition:





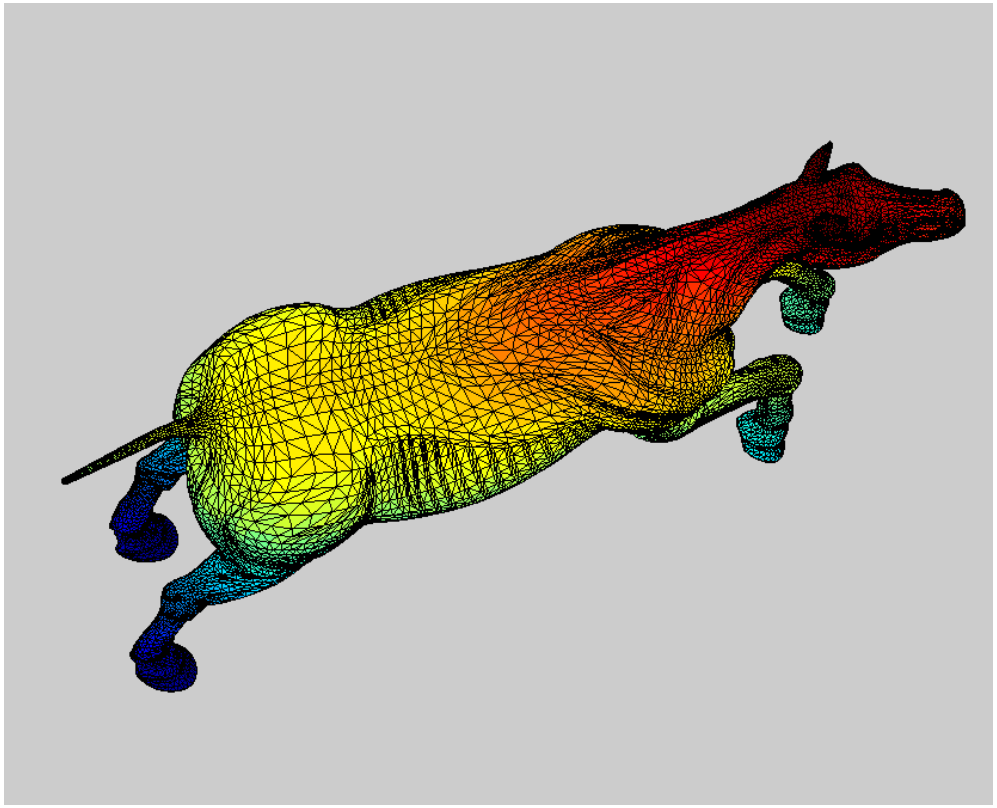



| Feature | Value |
|---|---|
| Intensity (Yellow) | 0.9875 |
| # spots | 542 |
| : | : |

## *Computer Graphics*:

The use of computer algorithms to generate images from models (3D objects, texture, color, illumination, etc.).



© Iván Sipirán

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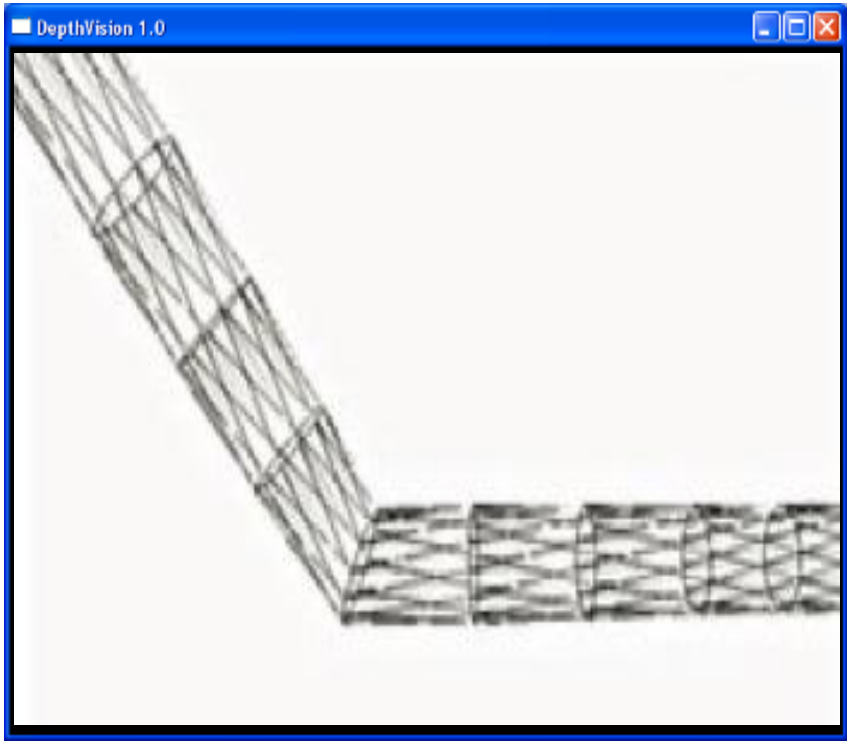


***3D mesh***

***Depth map***

***Simulation***

**Mery, D.**; Hahn, D.; Hitschfeld N. (2005): Simulation of Defects in Aluminium Castings Using CAD Models of Flaws and Real X-ray Images. Insight, 47(10):618-624. [ PDF ]

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## *Computer Vision*:

Computer vision is the science of endowing computers the ability to see.

[ Faugeras ]

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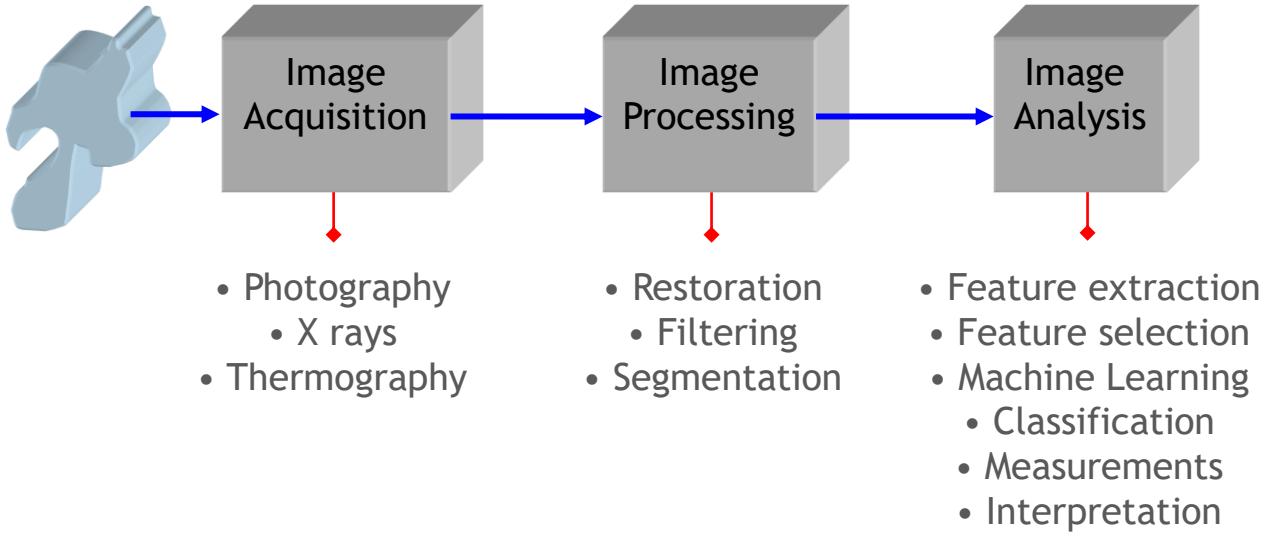
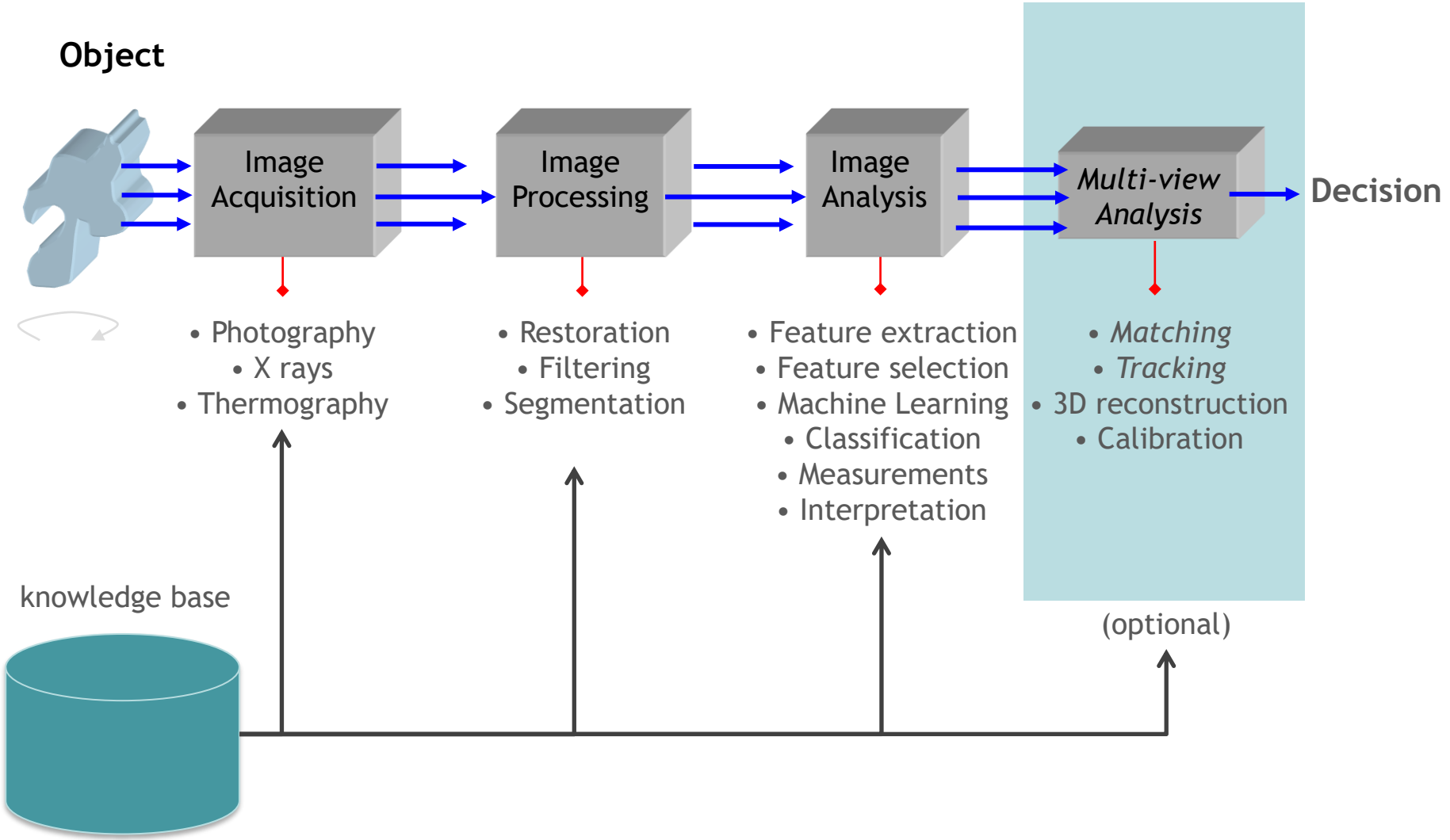
Computer vision is the science of endowing computers the ability to see. [ Faugeras ]

Computer vision is a field that includes methods for acquiring, processing, analyzing, and understanding images and, in general, high-dimensional data from the real world in order to produce numerical or symbolic information, e.g., in the forms of decisions. [ wikipedia ]

# *Computer Vision System:*

**Object**



# *Computer Vision System:*